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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/897,111	07/03/2001	Yoshihisa Inoue	1155-0221P	9238

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EXAMINER

LU, C CAIXIA

ART UNIT PAPER NUMBER

1713

DATE MAILED: 09/12/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/897,111

Applicant(s)

INOUE ET AL.

Examiner

Caixia Lu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 9-14 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6 and 7 is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☒ Claim(s) 1-13 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 and 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group I in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). However, in applicants' response filed on July 21, 2003, applicants have not elected a catalyst species as requested. During a phone interview with Attorney Marc Weiner on September 2, 2003, applicants' representative has elected the catalyst species as the product resulted from the reaction between compound (C') and compound (III) of Claim 6 or 7. The elected invention reads on Claims 1-3 and 6-8.
2. The Search results indicate that the polymerization process defined by the elected catalyst species is novel. The examination is now extended to the next catalyst species-- the catalyst species as the product resulted from the reaction between compound (C) and compound (I) of Claim 4 and, thus, Claims 1-3 and 6-8 plus Claim 4 are now under examination.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-3 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 1

Page 243, the second line from the bottom, term "and" should be replaced with --or--.

Claim 3

Page 244, the last line, term "and" should be replaced with --or--.

Claim 8

Page 252, the last line, term "and" should be replaced with --or--.

***Claim Rejections - 35 USC § 102/103***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Mecking et al. (J. Am. Chem. Soc. 1998, 120, 888-899).

The instant claims are directed to a process for preparation of a polar olefin copolymer comprising copolymerizing a non-polar olefin and a polar olefin in the presence of a transition metal catalyst and a cocatalyst, wherein the difference between the coordination energies of ethylene and methyl acrylate ( $\Delta E$ ) is 50 kJ/mol or less.

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Mecking teaches the copolymerization of ethylene and methyl acrylate in the presence of a  $\alpha$ -diimine ligand containing palladium catalyst. In Table 4, line 4, Mecking teaches the  $\Delta G$  (the same as the  $\Delta E$  of the instant claims) is 4.9 kcal/mol which is less than 50 kJ/mol. Mecking's teaching encompasses the instant claims.

8. Claims 1-3 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bensleben et al. (US 6,410,664) and Bensleben et al. (US 6,197,715).

US 6,410,664 teaches copolymerization of ethylene and functionalized cyclic olefins in the presence of a Nickel(II) salicylaldimine catalyst (col. 30, lines 24-53 and Table 8).

US 6,410,664 does not expressly teach the coordination energies between the catalyst and ethylene or methyl acrylate. Based on the fact that the copolymerization of ethylene and functionalized cyclic olefin can be readily performed, a skilled artisan would have expected the catalyst of US 6,410,664 to inherently have a  $\Delta E$  which satisfies the  $\Delta E$  limitation of the instant claims because the  $\Delta E$  limitation of the instant claims is to guarantee the copolymerization between the non-polar olefin and polar olefin to occur readily. When the copolymerization between the non-polar olefin and polar olefin can be easily conducted, the  $\Delta E$  is expected to be small, e.g. to be in the  $\Delta E$  range of the instant claims.

Once a product appearing to be substantially identical is found and a 35 USC 102/103 rejection made, the burden of proof is shifted to the applicant to show an unobvious difference. In re Fitzgerald, 205 USPQ 594. In re Fessmann, 180 USPQ

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324. Applicants have not met their burden to demonstrate an unobvious difference between the claimed product and the products of the prior art examples.

Similar rejection can be made over US 6,197,715 (Example 11 of col. 34).

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bensleben et al. (US 6,410,664) and Bensleben et al. (US 6,197,715).

The teaching of US 6,410,664 is relied upon as shown above. It is noted that the transition metal the working examples of US 6,410,664 is Ni rather than a metal from Groups 4-6 and 11; however, the transition metals of Group 4 such as Zr, Ti and Hf are taught in col. 4, lines 46-50.

Thus, it would have been obvious to a skilled artisan at the time the invention was made to employ the teaching of 6,410,664 to conduct copolymerization between polar and non-polar olefins in the presence of Group 4 transition metal containing catalyst since such is taught in the reference and expected to work and in the absence of showing criticality and unexpected result.

Similar rejection can be made over US 6,197,715 (col. 9, line 5 and Example 11 of col. 34).

***Allowable Subject Matter***

10. Claims 6 and 7 are allowed.

11. Claim 8 is would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

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Fujita et al. (JP-11199592) and Suzuki et al. (US 2000/0151661) both teach an olefin polymerization process in the presence of the catalysts which encompass those of the elected catalyst species of Claims 6-8; however, the cited prior art does not teach or reasonably suggest using the catalyst to copolymerized a polar olefin and non-polar olefin. Thus, the instant claims are deemed to be novel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caixia Lu whose telephone number is (703) 306-3434. The examiner can normally be reached on 9:00 a.m. to 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (703) 308-2450. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1193.



Caixia Lu  
Primary Examiner  
Art Unit 1713

September 10, 2003